

centre of the *Volvox*. The endochrome of these cells undergoes no division. In other utricles, on the contrary, which acquire the volume and form of the female cells, the green plastic matter divides symmetrically into an infinity of very small parts, or linear corpuscles, aggregated into discoid bundles. These are beset with vibratile cilia, and oscillate in their prison, slowly at first, but afterwards more rapidly, and they soon dissolve into their constituent elements. The free corpuscles are very active, and it is impossible not to recognize them as true spermatozoids; they are linear, and thickened at their posterior extremity; two long cilia are situated behind their middle; and their rostrum, which is curved like the neck of a swan, is endowed with sufficient contractility to execute the most varied movements. These spermatozoids, as soon as they can diffuse themselves in the cavity of the *Volvox*, soon collect about the female cells, and succeed in penetrating into their interior; there they fix themselves by their rostrum to the plastic globule in each cell which is to form a spore, and gradually become incorporated with it. Fecundation thus effected, this reproductive globule envelopes itself successively with an integument beset with conical pointed processes, and with an inner smooth membrane; the chlorophyll which it contains then gives place to starch, and a red or orange-coloured oil. This is the mature spore, of which the author has seen forty in one sphere of *Volvox*. The author has not observed the germination of these spores.

He adds, that there is no doubt that the *Sphærosira Volvox* of Ehrenberg is a monœcious *Volvox globator*; that his *V. stellatus* is the same *V. globator* filled with spinose or stellate spores; and that his *V. aureus* only differs from the common *Volvox* by having accidentally smooth spores.—*Comptes Rendus*, 1 Dec. 1856, p. 1054.

*List of Phænogamous Plants collected by Dr. E. K. KANE on the Western Coast of Greenland, from 73°–80° North. Extracted from his "Arctic Explorations,"* ii. 445.

Dr. Kane and his parties having penetrated much further towards the Pole than any of the other Arctic expeditions, and succeeded in arriving at what is perhaps the northern extremity of Greenland, and at an open Polar Sea of unknown extent, the list of the plants brought back by them possesses interest—(1) from its raising the total number of N. Greenland plants from forty-nine to seventy-six; (2) by showing that there is little or no difference in the vegetation throughout the whole extent of the Greenland coast from the 67th to the 81st degree; (3) by proving that two plants, *Hesperis Pallasii* and *Vesicaria arctica*, flourish on the most northern land that has been discovered, although they had previously been noticed only in the milder regions of the Polar zone. Mr. E. Durand, the editor of the botanical appendix to Dr. Kane's book, remarks upon this latter fact, that, although limited to the appearance of two species, it "seems to indicate peculiar isothermal influences, depending either on warm currents, greater depth of water, or actual depression of our globe at its poles."

Mr. Durand also observes, that "another remarkable feature of Dr. Kane's collection is, that, dividing into two equal parts the whole extent of coasts visited by him, and each section presenting about the same number of stations at which herborizations were made, the northern section, from Upernavik to Washington Land, has yielded more dicotyledonous plants than the southern, from Fiske Fiord to 73°; and Smith's Sound alone, only three degrees in length, has proved nearly as rich."

After these few remarks, we subjoin the list of species:—

- |                                        |                                |
|----------------------------------------|--------------------------------|
| Ranunculus nivalis, <i>a</i> , Linn.   | Saxifraga flagellaris, Willd.  |
| — nivalis, <i>β</i> , Br.              | — aizoides, Wahl.              |
| — Sabini affinis.                      | — tricuspadata, Retz.          |
| Papaver nudicaule, Linn.               | — cæspitosa, <i>β</i> , Hook.  |
| Hesperis Pallasii, T. & Gr.            | — aizoon, Jacq.                |
| Vesicaria arctica, <i>a</i> , Hook.    | — nivalis, <i>a</i> , Linn.    |
| Draba alpina, <i>β</i> , Br.           | — —, <i>β</i> , Linn.          |
| — — corymbosa.                         | — foliolosa, Br.               |
| — — micropetala.                       | — cernua, Linn.                |
| — —, var.                              | Gnaphalium sylvaticum, Linn.   |
| — glacialis, <i>β</i> , Hook.          | Hieracium vulgatum, Fries.     |
| — rupestris, <i>a</i> , Br.            | Arnica angustifolia, Vahl.     |
| — nivalis, Willd.                      | Taraxacum palustre, DC.        |
| — hirta, Linn.                         | Campanula uniflora, Linn.      |
| Cochlearia fenestrata, Br.             | Vaccinium uliginosum, Linn.    |
| Arenaria grœnlandica, Spr.             | Cassiope tetragona, Don.       |
| — arctica, var., Hook.                 | Pyrola chlorantha, Sw.         |
| Stellaria longipes, <i>δ</i> , T. & G. | Pedicularis arctica, Br.       |
| — —, <i>ε</i> , T. & G.                | — Kanei, Durand.               |
| Cerastium alpinum, <i>a</i> , Linn.    | — hirsuta, Linn.               |
| — —, var.                              | Diapensia lapponica, Linn.     |
| Silene acaulis.                        | Polygonum viviparum, Linn.     |
| Lychnis apetala, <i>a</i> , Linn.      | Oxyria digyna, Campd.          |
| — —, <i>β</i> .                        | Empetrum nigrum, Linn.         |
| Dryas octopetala, Linn.                | Salix arctica, Br.             |
| — integrifolia, Vahl.                  | — herbacea, Linn.              |
| Alchemilla vulgaris, Linn.             | Luzula hyperborea, Br.         |
| Potentilla pulchella, Br.              | — arcuata, Mey.                |
| — nivea, <i>β</i> , Hook.              | Carex rigida, Good.            |
| — —, var., T. & G.                     | Eriophorum polystachyon, Linn. |
| — frigida, Vill.                       | Alopecurus alpinus, Eng. Bot.  |
| — tridentata, Ait.                     | Agrostis canina, Br.           |
| Epilobium angustifolium, Linn.         | Poa arctica.                   |
| — latifolium, Linn.                    | — alpina, Linn.                |
| Sedum Rhodiola, DC.                    | Festuca ovina, Linn.           |
| Saxifraga oppositifolia, Linn.         | Trisetum subspicatum, Linn.    |

Mr. Durand states, that the additions to the North Greenland column of Dr. Richardson's Statistical Tables (where the generic names only are given) are—

- |                    |                                           |
|--------------------|-------------------------------------------|
| Ranunculus Sabini. | Cerastium, var. (probably a new species). |
| Hesperis Pallasii. | Dryas octopetala.                         |
| Vesicaria arctica. | Alchemilla vulgaris.                      |
| Draba (3 species). | Potentilla frigida.                       |
| Arenaria arctica.  |                                           |

Sedum Rhodiola.  
Saxifraga (2 species).  
Gnaphalium sylvaticum.  
Hieracium vulgatum.  
Vaccinium uliginosum.  
Pyrola chlorantha.  
Diapensia lapponica.

Pedicularis (2 species).  
Empetrum nigrum.  
Salix (1 species).  
Eriophorum (2 species).  
Agrostis canina.  
Festuca ovina.

There is only one undoubtedly new species in the collection, viz.—

“*Pedicularis Kanei* (Durand). Caulibus compluribus; foliis linearibus glabris; pinnulis minutis, omnibus remotis, rachi petioloque vix dilatatis; corolla rosea, galea edentata.

“Planta quam præcedens [*P. arctica*] robustior, radice carnosa palmatim ramosa. Caules complures, vix lanati; folia linearia, glabra, pinnatifida; pinnulæ minutæ, omnes remotæ, margine rursus fere integra, deorsum acute serrata; petiolus foliorumque rachis vix dilatati; prior ad basin parce lanatus. Spica densa; bracteæ lanuginosæ angusto-lanceolatae, fere integræ, ad apicem tantummodo obscure pauci-dentatæ. Calyx 5–6-fidus, lana alba densissima implexus; corolla rosea, textura tenerrima, calyce duplo longior; labium inferius tripartitum, suberoso-dentatum; lobus medianus subrotundus (in præcedenti emarginatus), galea minus incurva, angustior, edentata. Staminorum filamenta pilosa; stigma subrotundum, papillosum, integrum; germen subglobosum.

“*P. Kanei* is easily distinguished from *P. arctica* by the delicacy of its pinnules, which are all remote, on a rachis scarcely dilated; by its bracts, perhaps more lanuginous, but almost entire; by its rose-coloured flowers, its edentate helmet, and the thin texture of its corolla and calyx. The middle lobe of the inferior lip and stigma are not emarginate, as in *P. arctica*, and the germ is of a more globose form. It is, moreover, a larger plant, with many more stems, and a more fleshy root.”—Kane’s Arctic Explor. ii. 458.

Gathered on the coast of Smith’s Sound.

Only one fern is mentioned as found to the north of 73°, viz. *Cystopteris fragilis*, at Wolstenholm, 76°.

One new moss also is recorded, viz.

“*Bryum lucidum* (James). This species in all its characters resembles *B. crudum*, except the capsule, which is oval, without a collum, and not pyriform, and of a dark brown colour.”—*l. c.* 465.

We must refer to the Essay itself for many other valuable and interesting remarks.

#### Remarks on young Bony Pikes (Lepidosteus).

By Professor AGASSIZ.

Mr. J. E. Gavit exhibited to the American Association at Albany a vase containing young Gar-Pikes 4 to 6 inches long, from Lake Ontario, which called forth some remarks from Prof. Agassiz. The point of special interest in these representatives of the ancient Ganoids was the occurrence of an upper lobe to the caudal fin containing the prolonged vertebral column. It was placed directly above that fin, was of equal length, and had a lanceolate form; it moreover had a